

Can dream content indicate temporal aspects of dreaming?

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Summary. In this essay, dream reports of the author's dream diary were probed for their temporal aspects regarding dream production and experience. Three different general inferences were drawn from the dream contents: (a) Dreams are produced and experienced in real-time. (b) Dreams are produced in advance, saved and experienced later. (c) Dreaming is constant, being aware of it is variable. There was no single unifying resolution for the inferences. The essay suggests a potential role of dream content in questioning and investigating the temporal aspects of dreaming.

Keywords: Dream content, dream production time, dream experience, dream diary

1. Introduction

There are several definitions of dreams, based on field of study and also within the field of study itself. However, there are three primary axes that define dreams: recall, content, and association with wake/sleep states (Pagel et al., 2001). The mental functioning along the wake/sleep axes could be thought of as moving along one continuum, namely, waking-to-dreaming continuum that starts with focused waking, to reverie, and ultimately to daydreaming and dreaming (Hartmann, 2007). The time of dream occurrences during sleep is reported based on dream recalls upon wakefulness. Aserinsky and Kleitman (1953) is a pioneer experimental study that associates dreams and rapid eye movement (REM) sleep based on dream recalls. Through neuroimaging, REM sleep was later confirmed to be associated with selective activation in the visual cortex (Braun et al., 1998). Dreaming, however, is not limited to REM sleep. The recall of cognitive activity was reported in different studies to happen more often in REM sleep and to a lower rate in NREM sleep (Nielsen, 1999). Even lucid dreaming which mainly occur during NREM sleep was also reported during NREM sleep (Stumbrys & Erlacher, 2012). Being a mental experience, neuroimaging techniques could not, however, confirm the state of dreaming without a confirmation from the individual experiencing it. Recalling and reporting dream content is considered as a window into dream world. It is also widely accepted that dream production time and dream experience occur simultaneously. Research employing dream contents in investigating the relative timing of dream production and dream experience is lacking. This essay discusses selected dream reports from the author's diary and aims to investigate the potential of dream content in indicating temporal dimensions of dreaming.

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Submitted for publication: August 2025
Accepted for publication: November 2025
Online first: January 12, 2026

2. Method

This essay is based on interpretative, temporal analysis of my dream reports. Since the Doll Dream – a dream that was reported in December 2021, a dream diary was kept, and whenever a “significant” dream occurred, it was recorded and the aspect(s) about its significant were reported. A dream was considered significant when it gave rise to a ‘new’ idea regarding the concept of dreaming or to an idea supporting or opposing previous idea. Otherwise, the dream was not reported and not counted. There was no pressure to report dreams. Several “significant” dreams were even forgotten and eventually missed due to a delay in reporting them.

The identification of dream time indicators was qualitative based on the specificity of each dream. In this essay, dream content refers solely to the manifest content of dream. Dream reports whose content contains temporal significance were grouped together for further assessment according to the relative time of dream production and dream experience. The initial criteria of grouping the dream reports was: (a) Dream content is influenced in real-time by real world stimuli. (b) Dream content inherently indicates temporal dimensions. Dreams whose content had links to before-sleeping experiences, even recent ones, were excluded.

3. Results and Discussion

Out of the reported 77 dreams, 18 dreams were found to potentially indicate temporal aspects of dreaming. The inferences derived from examining the contents of the selected dreams are: 1- Dreams are produced and experienced simultaneously in real-time. 2- Dreams are produced in advance, saved and experienced later or 3- Dreaming is constant, being aware of it is variable. No conclusive explanation addressing the different inferences was identified. Dreams that reported for their temporal significance are presented here in full or presented in part when a specific part was under consideration.

3.1. Dreams are produced and experienced simultaneously in real-time.

A total of 12 dreams were found to be influenced in real-time by interoceptive or exteroceptive stimuli from the real world,

indicating that dream production and experience happen simultaneously in real-time.

3.1.1 Dream content influenced in real-time by exteroceptive stimuli

In a dream that felt scary:

I enter a dark seemingly hunted creepy room. I sleep on the bed there. In the night I am awake and I open my eyes to see if a ghost is there. I see no ghost but a shiver ran down along my spine. I wake up.

In the real world I took a late shower before going to bed that night and as it was almost mid-May, I did not expect that the temperature would drop significantly in the early hours of the morning. I went relatively wet to bed and did not cover myself. When I woke up from the dream I was shivering from cold. The dream scene of shivering could hence be a result of a timely input from the real world to the dream world. Another temperature-related dream is the following:

I find two cats, the smaller cat is white while the other one is Indigo. I try to clean the white one under a running tap. The cat starts to feel cold. I am worried that the cold could be life-threatening to the cat. I wake up.

In the real world, I was sleeping that cold night without enough covers and I woke up feeling the low temperature of my room. The sensation of the real world drop of temperature was possibly translated in real-time and presented in the dream world as: cold sensation = cat + water. Another dream that may have real-time connections, though remotely, to the temperature in the real world occurred in the beginning of winter. It was the first day in that year for me to use blankets. I had a lucid dream of swimming and diving freely and happily. The addition of the blankets had conserved my body temperature in comparison the days before. As I woke up, I felt that my body is warm and stretched in a relaxing environment, in contrast to the cold sensation and the tight curling up position of sleeping in the previous days.

Dreams that were influenced by touch or pain caused by external stimuli were also reported. The following is the last part of a dream about my childhood:

I am in the childhood house. Instead of eating my breakfast, I eat a lot of chocolate. I then rinse my mouth with water trying to remove the chocolate that remained on my lips in order to avoid being caught. I wake up.

In the real world, after waking up, I noticed that my mouth was dry with unusual adhesion of the lips. Another example is the following dream scene that also led to my awakening:

I am at a party and a known person to me is pumping water from a pipe on the attendance as humor and an act of welcome to the party. My face is hit with water and I feel the scratching sensation of water in my eyes.

As I woke up I realized that an eyelash hair was twisted toward my eye causing a scratching sensation.

Pain sensation also influenced the content of a dream. A stiffness in the neck due to pillow deformation was translated in a dream as a shot in the neck. The dream resulted in wakefulness. Such worrying dreams were not unfamiliar to me. At the time of this dream I was living in Syria, a war affected country, and this type of traumatic dreams were reported to be common in conflict zones (Hunter, 2022). How-

ever, the location of the injury in the dream corresponded to the then current real world situation, that is, the pillow deformation, the resulted stimulus and the possible risk to the neck. This correlation indicates that the production of the dream along with its experience were potentially happening in real-time.

Auditory stimuli were also reported to have influenced dream content. The following dream scenes illustrate this point:

I am in a long noisy car-chase in narrow roads of a populated neighborhood. The car crashes into a wall. I wake up.

Immediately after waking up, I realize by hearing that a mosquito had entered my mosquito net and was hovering nosily around my head. On another occasion, I slept after playing a long audio file on the speaker of my mobile phone. The dream that led to my awakening that night is as follows:

I am in a hotel room trying to reduce the sound of a small black radio by turning the tuning knob left and right but nothing happens anyway. I feel that this is strange. I wake up.

The direct comparability between the dream world and the real world suggests a timely production of the dream.

3.1.2 Dream content influenced in real-time by interoceptive stimuli

A nightmare was reported to be influenced by interoceptive stimulus. After a weekend party in which I regretfully smoked hookah, I went to bed when I started to feel chest discomfort. I slept and dreamed of being suffocated under a bed cover. I woke up with a feeling of severe chest tightness and difficulty breathing, the same feeling I had before as a result of smoking hookah. Three other dreams that caused awakening centered on urinary urgency. The compelling need for urination was present after waking up indicating that the dreams were likely produced in real-time. Dreams, hence, are likely produced and experienced in real-time or at least have the quality of being susceptible of alteration in real-time based on internal or external stimuli.

3.2. Dreams are produced in advance, saved and experienced later

The Doll Dream: I am home [although I don't remember to have seen that house before]. I hear a noise outside the house. I go out. There is a small woody room resembling a forest cabin and I notice that the lights there are on. I open the door of that cabin and inside there is a little (\approx 50 cm high) doll-like creature that is moving and walking around in the cabin. It seems as if it was made of a semi-transparent milky yellowish plastic. Suddenly, the creature and I are in the house where I offer him food. We are eating a lot. The creature is no more appearing as a toy but rather as a small boy. We continue to eat. The creature appears as a fat boy. Suddenly, the shape of the boy is enormously fat resembling an inflated balloon. At this moment it hit me that the small creature was getting fat due to the food it had been eating. I wake up.

After waking up, I had noticed that there was something additionally strange about this dream. The strange thing

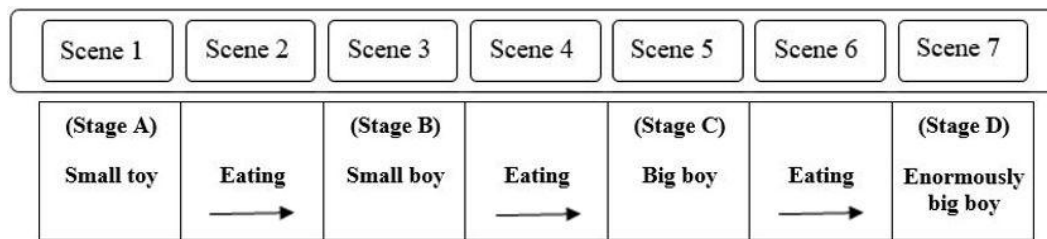


Figure 1. The stages of the Doll Dream along the ‘scenes’ of the dream, with the arrows indicating the initially hidden causality.

about the dream could be illustrated by dividing the dream into four stages based on the size of the creature, as shown in Figure 1.

What set the dream apart was the logical order that was not noticed by me, the dreamer, not at Stage B, not at Stage C but only after Stage D. In other words, the reason of shifting from stage A to B and then to C (i.e., more eating adds weight) was not known to the dreamer and “revealed” or “inferred” only after the completion of Stage D. This hidden three-stage causality indicates that the dream was possibly processed as a whole before it was experienced. This means that what neuroimaging instruments register during dreaming could be the occurrences of the dream experience, not necessarily the production of the dream which could be a separate process that have been completed before. The three-stages of causality in the dream could however be argued to be a dream world copy of a simple sequence known in the real world.

Another dream that could have the elements of preproduction is the Picture Dream. It should be noted that I did not know what the dream is about till precisely the end of the dream. The dream is as the following:

There is a finger with cracked nail. There is gradual zoom out revealing two hands. The frame shifts slowly to be between the hands. A dark horizontal line starts to appear. There is gradual zoom in and brown leafless trees start to appear. There is gradual zoom out and the two persons of the hands appear. They are a man and a woman sitting in a restaurant at a table next to a window. They are sitting opposite to each other with each one having one hand on the glass of the window that features a background with distant leafless trees. The whole one-scene dream is of a static drawing in shades of brown. I wake up.

I was in this dream a viewer not a participant. I woke up only when I realized the nature of the scene and that I am separate from the dream. Not only the sequence of the whole dream from the start till the end suggests earlier processing, but also the slow unified tempo of the sequence.

Another dream that potentially reveal elements of previous production is as follows:

I am driving a car with a lady (no earlier acquaintance). I receive a mobile call and answer the caller honestly about my location. I notice that the lady is not happy that I revealed my location to the caller. I reply that the caller might be in the same area and may have already seen the car. The lady and I enter into a house. We go through the house to the other side of the house and exit from the backyard garden. I return to the house. I tell the lady who

is now in the house with 3 or 4 strangers that I accidentally left my laptop bag earlier in the house. I search and find the bag in a hidden place. I carry the bag with my hand and tell the lady that the weight of my bag is now lighter, I go out of the house and start hearing laughter. I think that the people in the house are laughing at me. I wake up.

Upon waking up, I realized that the people in the dream, including the lady, were a gang of thieves, and that there were chronological signs of a possible theft along the dream. While this dream could be produced and experienced in the real-time, there is a possibility that at least the general theme of the dream, namely, “being under theft” was set in advance to the dream experience.

A summary of another dream goes as the following:

A small cliff or agriculture contour [never seen in real world]. I feel a strange creepy feeling about the cliff. I am in a taxi in a rainy day going to a hostel. A gang in the hostel tries to take my money. I am in a verbal confrontation with the gang in the hostel and also on the way to its gate. I am fighting with the gang near the same cliff. The cliff (as seen in the first scene). I wake up.

The dream ended at the very same starting scene. The strange feeling regarding a normal cliff at the beginning of the dream suggest the possibility that the dream plot was already processed and that the cliff had a later role in it. Alternatively, the dream could be a form of repetition. Having one or more experiences of recurrent dreams is reported to be common especially among adults (Schredl et al., 2022). Investigating the likelihood of whether recurrent dreams are processed every time anew, or they are already saved and experienced repeatedly, could help reveal more information about the temporal dimension of dreaming.

3.3. Dreaming is constant, being aware of it is variable

A summary of a dream in a never-before-seen settings is as the following:

I am walking with a female friend. We are being attacked by a dog. We are playing with gravels. A car accident happens. There is a wall along the sidewalk behind which there is a lack. [Here is a forgotten section from the dream]. School teachers are cruising around and racing in motorboats in the lake. I am driving an amphibian car in the same lake. I am thinking of the transmission system and the link between the engine and the propeller in this amphibian car. I wake up.

I reported the dream immediately upon waking up. There is, however, a forgotten section in the dream that I know it was there, but I do not remember. Actually, I could have remembered the dream starting from the scene "School teachers are cruising ..." without noticing that there were previous sections. The same logic could be applied to the first reported scene "I am walking with a female friend". I am not actually sure about the precise start of any of my dreams. The possible inaccurately reported dream start could add to the already common bizarre content of dreams.

The Call Dream and what followed:

My father and I are visiting a relative. We meet the relative and a normal conversation happens. Later my father leaves the house of the relative and wait for me outside. I talk with the relative and his son who came from his room to join the conversation. I wake up.

I am still in my bed with closed eyes and I hear the sound of the real rain outside. I hear the voice of my father who is living in another, but adjacent, building calling me to go to him. I get up and realize that the voice was only in my head. I check for confirmation. My father did not call me, he was asleep. The call should have been from the dream that I thought it was ended, from my father calling me to join him as he was still waiting outside the relative house in the dream world. The period during which I heard the rain and the voice of my father I was "practically" awake as my real world self was in continuous awareness of the rain outside. However, as the dream self too was "aware" of a dream world event (being called to join my father), I recognized that period as a transitional period between dreaming and wakefulness. During this period there was no abrupt shift from the dream world self to the real world self. This period was vague, with reported signals from the real world and dream world. It ended with the dominance of wakefulness. The dominance of wakefulness may not necessarily mean the elimination of the dream world. Not being aware of the existence of either world does not mean its absence. Both worlds could coexist, that is, when we are awake, the dream world continues in the background of wakefulness. This inference is not actually impossible. The continued dreaming in the background of the real world awareness could tentatively explain lucid dreaming to be a manifestation of the transitional state between the real world and the concurrent dream world with a distinctive type of dominance interplay. Some symptoms of mental disorders could be manifestations of impaired coexistence of the two worlds. Likewise, mood changes and intrusive thoughts in the real world could have an origin from the parallel dream world. In this regard it could be further hypothesised that déjà vu occurs when scenes from the real world and those from the parallel dream world coincidentally matches. Like the previous inferences, the inference that dreaming is constant while being aware of it is variable, requires large-scale qualitative and quantitative studies in order to be fully substantiated.

4. Limitations

Being related to one dreamer and the associated limited number of representative dreams are limitations of the current study. Due to the lack of comparable studies found in the literature that used dream content to examine temporal aspects of dreaming, the organization of the essay and the way the topic is handled are preliminary.

5. Conclusion

The study reports dreams from the authors' dream diary that potentially carry temporal significance and indicate a potential role of examining the manifest content of representative dreams in questioning and signaling the temporal aspects of dreaming.

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